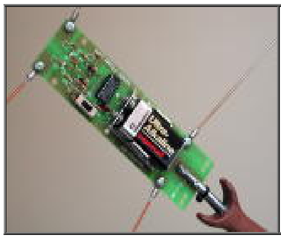
Have fun with this basic handheld radio direction finder kit!



The HANDI-Finder®

The HANDI-Finder® is a **HAN**dheld **DI**rection **Finder** which can be used to localize both AM and FM carrier-based sources using a single connection to the antenna input of an FM receiver tuned to the frequency of interest in the range of 45 to 450 MHz. It has been designed for bare-bone functionality as well as low power consumption, simplicity, and economy!

Because it is both an easy-to-build kit for the beginner and a convenient basis for further experimentation by those with more experience, it makes a great club project! Overall, it is a quick, inexpensive way to implement the concept of direction finding, and provides something relatively compact to keep readily available for locating sources of interference.

Except for adding a handle, fabrication is minimal. Two open-loop antennas (not supplied) are made from coat hanger wire bent into halves of a "bow-tie" shape and mounted directly to the circuit board, as illustrated in the "layout" drawing.

The 50-Ohm coax download (not supplied) is connected to an FM receiver and detects the carrier regardless of whether the transmission mode is AM or FM. The unit is switched on (UP) and rotated for a null in the audio tone that it adds to the audio coming out the receiver. The signal direction is perpendicular to the plane of the antennas. There is 180-degree ambiguity, but this is not a problem in actual use because multiple "bearings" must be taken anyway in order to establish a "fix" on the location. Once close in, the operator works toward the general sense of the direction, and again the ambiguity is not a problem.

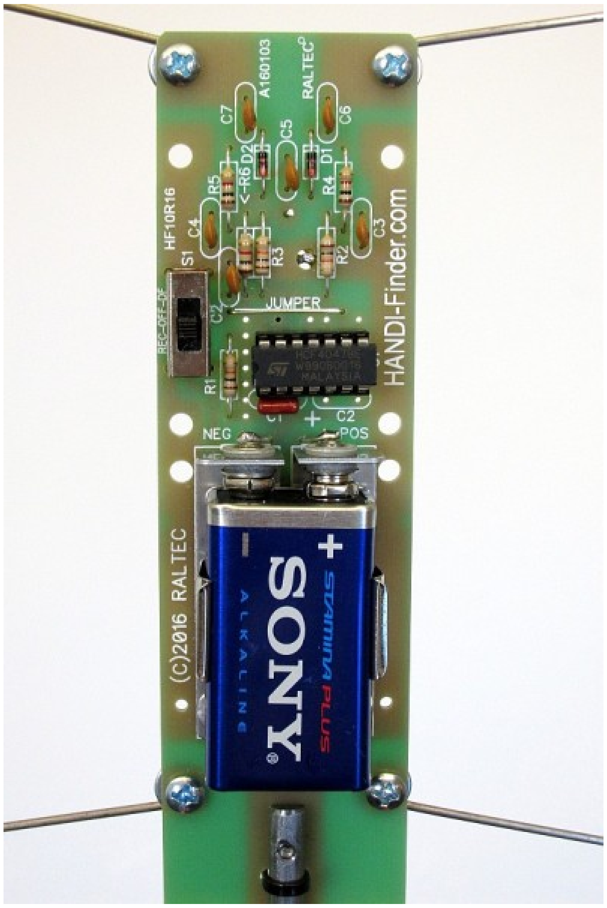
The 3-position switch is moved DOWN to stop the tone but still keeps the antenna activated for monitoring and standby purposes, --or it is moved to the CENTER position to shut off the unit. Refer to the extensive discussion in the manual which describes construction variations, and the concepts behind the design.

"Build the HANDI-Finder" appeared as an article in QST Magazine, May, 1993. All the information in that article and much more is included here! By clicking on the appropriate boxes in this web page, all the drawings and text that come with the kit can be printed out or downloaded from PDF files. *You can emulate the layout and build one on perfboard!* All parts are available from sources like Digi-Key and Mouser.

It should be noted that this is an experimenter's kit that starts out simple, but can get more complex as one expands on the principle to get better performance. Generically, this is known as a TDOA, Time-Difference-Of-Arrival detector.

Time/phase-difference detectors of this sort are susceptable to multipath, which is often overwhelming! ***This simple configuration can be quite acceptable on lakes or flat open land. However operation in the vicinity of hills, buildings, or dense forest can be quite problematic due to multipath.*** *Here, a combination of techniques, such as using the circuit in combination with two spaced beam antennas, can be much more effective, but also much more bulky!* ***Also note that since this scheme detects a carrier-based signal source, it CANNOT be used to localize random noise sources!***

This Radio Direction Finder Device Connects to an FM Receiver, Transceiver, or HT.



Current Version of Parts Placement Guide
except for mislabled C8, *--see below (b)*

[Click here](#) to print or download the 2010 layout drawing for dimensions.

California Proposition 65 WARNING: "This product can expose you to chemicals including lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm." For more information go to [www.P65Warnings.ca.gov](#)

(We make that statement out of an abundance of caution. However all parts in these kits are ROHS specified. This is not a beginners kit. Solder is not supplied. The users are cautioned to make themselves aware of the type of solder they use, and the soldering techniques they use for assembly --including post-soldering cleanup and the need for ventilation during all procedures.)

HANDI-Finder® Experimenter's Kits
may be obtained by contacting:
[Northern Ohio Amateur Radio Development](#)
P. O. Box 271
Brunswick, OH 44212-0271 USA
Tel: 330-225-7373, Rick, K8SCI www.noard.com

[Click here for prices and order info.](#)

Sales are limited to the US and Canada only.
Unfortunately, due to outrageous shipping costs, we have to require an ADDED charge for Canada.

Only complete packaged kits may be ordered.

Problems with defective or missing parts are promptly addressed.

[Click here](#) to open a PDF file that will allow you to read the *[Instruction Manual text.](#)* Once it is on your screen, select "print" or "download".	***[Click here](#)*** to open a PDF file that will allow you to read, print, and download the *[Schematic.](#)* *This also shows alternative coax connections to "off-board" antennas, such as two vertical Yagis mounted in parallel on a boom.*	***[Click here](#)*** to open a PDF file that will allow you to read, print, and download the typical kit ***[Parts List](#)*** to confirm what is in the kit, including a *correction note regarding C2 and C8.*

This is the official website for the "Original" HANDI-Finder® which was described in QST Magazine, May, 1993. The basic design originated in 1986

The components described in the parts list are compatible with, and properly fit, those circuit boards which have the official "HANDI-Finder" and RALTEC trademarks, unless otherwise noted on specific board versions. The components and approved circuit boards are sold only as complete kits and not available separately, except for warranty purposes.

Please tell us how you discovered this website, and what you would like to see added to it. Perhaps you have interesting experiences using the HANDI-Finder® that you would like to share with others.

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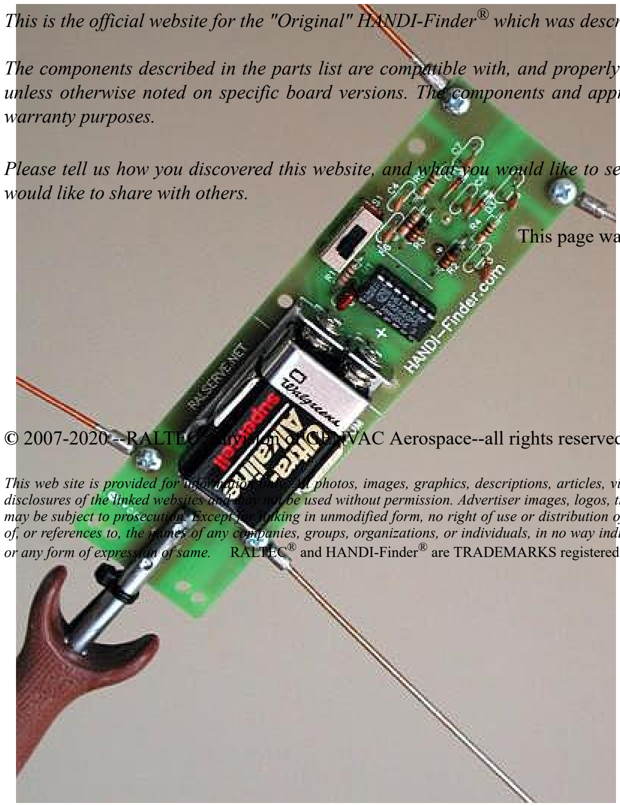

2008 Version:--differed in location of C1-R1.

Kit Troubleshooting . . .

-- Common problems:

a) --Forgetting to install the wire "jumper"

b) --Forgetting a component: Use the photos inside the manual overleaf. ***Click here to download a photo*** to help with component placement, and refer to the Parts List for a correction note regarding C2 and C8.

c) --Solder bridges which accidentally connect two pads that are no supposed to be connected. ***(Click here to download a photo)***

d) --Off-Axis Nulling or No Null at all:

With a known strong signal, if there is constant off-axis nulling or no null at all, check the continuity from the antenna wire to a circuit point on the board foil using an Ohmmeter. Flat washers are manufactured by stamping, and thus have a slight "cup" cross-section. Put the rounded side against the board foil. It was discovered that with the concave side against the board pad, it is often very difficult to tighten the hardware enough to compress the center of the washer so that it reliably contacts the board foil, which is sitting in a bit of a depression caused by the surrounding "solder mask" coating.

Latest preferred method: Put the screw through from the component side, then on the non-component side, the washer with rounded side against the board foil pad, then the antenna eyelet, then the lockwasher, then the nut, and tighten.